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Fall Protection Program

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Insert at end of Chapter 15
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H-1112-1 SAFETY AND HEALTH MANAGEMENT

**Safety and Health Program
Fall Protection Program**

**United States Department of the Interior
BUREAU OF LAND MANAGEMENT
OREGON STATE OFFICE**

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**SAFETY AND HEALTH PROGRAM
FALL PROTECTION PROGRAM**

OR/WA Supplement to BLM Manual Handbook H-1112-1
Safety and Health Management

**OCTOBER 2003
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H-1112-1 SAFETY AND HEALTH MANAGEMENT

15.5.1 Policy Statement

The Oregon/Washington Bureau of Land Management (BLM) is committed to providing a safe and healthful work environment for all employees. The agency has many safe work procedures (administrative and engineering controls) in place which reduce employee exposure to fall hazards on the job. These may include the use of guardrails, toe boards, safety nets, warning lines, covers, and various travel restriction systems such as barriers and fences. However, when these types of controls are neither feasible nor practical to fully protect employees during such work as minor construction or maintenance projects, a personal fall protection system must be instituted to prevent injuries from falls.

OSHA construction guidelines state that employees should not perform any duties which require them to work closer than *six* feet to an unprotected edge, platform or walkway of any building; nor, to utilize any elevated equipment unless they are properly protected from falling by the use of guardrail systems, safety net systems, barricades, a personal fall arrest system, or other appropriate types of fall protection systems. Employees must also exercise caution when working near any opening when that opening is elevated *six* feet or more above a walking/working surface.¹ Additional guidelines exist regarding structural integrity of all elevated walking/working surfaces as well as for employee protection from falling objects.

This Fall Protection Program provides broad, general guidance in an effort to minimize employee exposure to fall hazards in the work place in accordance with the following OSHA standards and ANSI guidelines.

OSHA 1910 - Occupational Safety and Health Standards for General Industry ²

- 1910.21 Subpart D Walking and Working Surfaces
- 1910.23 Subpart D Guarding floor and wall openings and holes
- 1910.66 Subpart F Powered platforms for building maintenance
- 1910.66 Subpart F Appendix C Personal Fall Arrest System (Section I, II and III)
- 1910.132 Subpart I General Requirements – Personal Protective Equipment

1926 OSHA Standards for Construction

- 1926.500 Subpart M – Fall Protection

ANSI Z359.1-1992 Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

¹ Per OSHA standards, all such openings must be guarded, regardless of location.

² All Federal employees are covered by the OSHA General Industry Standard 29 CFR 1910, specifically Part 1960 – Basic Program Elements for Federal Employee Occupational Safety and Health Programs.

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15.5.2 Purpose and General Information

In the construction industry, falls are the leading cause of worker fatalities. Each year, on average, between 150 and 200 employees are killed and more than 100,000 are injured as a result of falls at construction sites. Many serious injuries occur from falls of only a few feet. The US Department of labor lists falls as one of the leading causes of traumatic occupational death, accounting for 8% of all occupational fatalities from trauma.

Construction sites, however, are **not** the only areas that pose serious fall hazards. Some other areas and work activities where fall protection may be required to prevent employee injuries include ramps, runways and other walkways; excavations and holes, hoist areas, formwork, reinforcing steel and leading edge work, unprotected sides and edges in work zones, overhand bricklaying or roofing work, precast concrete erection, wall openings, and many other general walking/working surfaces. Virtually all BLM work sites pose various fall hazards, regardless of the type of work performed or the number of employees stationed at the site.

Slips, trips and falls account for the majority of general industry accidents. Statistics indicate that these incidents cause 15% of all accidental deaths, and are second only to motor vehicles as a cause of fatalities.

The OSHA standard for walking and working surfaces [29 CFR 1910.21-33 - Subpart D] applies to all permanent places of employment, except where domestic, mining, or agricultural work is performed. And, the most frequently cited OSHA standard usually involves “improper guarding of open sided floors or platforms.” [Reference 29 CFR 1910.23 *Guarding Floor and Wall Opening and Holes*]

Workplace accidents from falls are generally complex events involving a variety of factors. Working on and around stairways and ladders are major sources of injuries and fatalities among construction workers. Many of the injuries are serious enough to require time off the job. OSHA rules apply to all stairways and ladders used in construction, alternation, repair, painting, decorating, and demolition activities on worksites covered under the construction safety and health standards.

Consider how often ladders are used during the work day. Ladders are indispensable tools and are used on virtually every Bureau of Land Management worksite. Employees tend to take ladder use activities for granted as they are needed quite frequently to accomplish daily work tasks. Ladders are simply built and easy to use, but they are not always user friendly. Work related falls injure about 5,000 employees each year in Oregon. Nearly 500 workers are seriously injured because they fell from a ladder. In Washington State, over 2,000 claims a year are associated with falls with at least one fatality being recorded each year. Employees who fall from ladders are usually less than 10 feet above the base of the ladder support. Most of these falls involve portable ladders that move, tilt, or shift while an employee is climbing or descending. Unstable or slippery base surfaces are the primary reasons ladders tip and fall.

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Other reasons for ladder falls include a misplaced step or a slip of the foot, loss of balance, over reaching, carrying equipment and tools while climbing a ladder,³ and the ladder being struck by a vehicle or other object. [Reference Section 15.5.6 *Ladders*]

The OSHA standard for fall protection deals with both the human and equipment-related issues in protecting workers from fall hazards. This program provides general guidance regarding fall protection systems and is intended to protect employees from falling off, into or through working levels and to protect them from being struck by falling objects.

15.5.3 Scope

Federal OSHA regulations and this Fall Protection Program covers all employees at all times *except* when an employee is inspecting, investigating, or assessing workplace conditions prior to the actual start of work or after all work has been completed [e.g., when an employee is inspecting a roofing project, that employee is not required to wear the fall protection gear worn by the employees who perform the work].

A uniform threshold height of **6 feet** [for construction activities under 29 CFR 1926 Subpart M - Construction Standards] is set, thereby providing consistent employee protection. These standards state that employees must be protected from fall hazards and falling objects whenever they are **6 feet or more above** the ground or a lower level when performing various types of general construction activities. Protection also must be provided for employees who are exposed to the hazard of falling into dangerous equipment on the work site. [For additional information, see the *Reference Section*]

OSHA regulations stated in the 29 CFR 1910 - General Industry Standards Subpart D – Walking and Working Surfaces defines covering and guarding requirements for floor and wall openings and holes as well as protection on open-sided floors, platforms, and runways. This requirement uses **4 feet** as the uniform threshold height. Guarding is usually provided by a standard railing as well as toe boards where necessary.⁴

OSHA construction standards also contain specific regulations for stairways, ladders, and the use of scaffolding on worksites.

Both sections [29 CFR 1910 and 1926] require that all fall protection measures are compatible with the type of work being performed. Generally, fall protection can be provided through the use of the fall protection systems described in Section 15.5.4 *Fall Protection Systems* below.

³ Climbing ladders while carrying equipment or tools is recognized as a poor work practice and the BLM specifically recommends that employees do not engage in this practice.

⁴ Additional information regarding prevention of falls through skylights and roof and floor openings at the following website:
<http://www.cdc.gov/niosh/docs/2004-156/>

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OR/WA districts may use this program as a template to create a Fall Protection Program specific to site needs. District policies must meet the minimum requirements of OSHA and this program.

15.5.4. Fall Protection Systems

Fall protection is a concept that describes the systems, processes, procedures, equipment and regulations used to protect employees from falls and to reduce the risk of falling. All fall protection systems serve one of two basic functions: they *prevent*, or, *restrain* an employee from falling. In other words, they safely stop an employee from falling, or arrest (stop) an employee who does fall. There are six basic fall protection systems.⁵

- Guardrail Systems
- Safety Net Systems
- Personal Fall Arrest Systems

These three systems are conventional fall protection systems. They have the widest range of applications and satisfy protection requirements for most tasks that expose employees to fall hazards.

Guardrail systems are *restraint* systems with vertical barriers consisting of top rails, mid rails, and intermediate structural members such as balusters. These systems prevent employees from falling and keep objects from dropping to lower levels. Some common application examples are listed below.

- Dangerous equipment, when a floor, roof, or other walking/working surface is less than six feet above dangerous equipment; or, when working surface is six feet or more above the dangerous equipment
- Falling objects
- Holes
- Ramps, runways, and other walkways
- Roofing operations, low-sloped roofs
- Unprotected sides and edges of walking and working surfaces [General Industry Standard of four (4) feet]

Safety net systems generally consist of mesh nets of various types. General application examples include:

- Dangerous equipment
- Leading edge construction work
- Roofing operations on low-sloped roofs; and, on roofs with slopes greater than 4 in 12 (vertical to horizontal)
- Unprotected sides and edges of walking and working surfaces and wall openings

⁵ See the *Definitions* section for additional information regarding basic fall protection system elements.

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Personal fall arrest systems are designed to be used by one person. Basically, they consist of an anchorage, connectors, and a body harness. Additional components include a lanyard, a deceleration device, and a lifeline.⁶ Some application examples are stated here.

- Dangerous equipment
- Hoist areas of walking and working surfaces
- Holes
- Roofing operations, low-sloped roofs and roofs with slopes greater than 4 in 12
- Unprotected sides and edges of walking and working surfaces
- Wall openings

The three remaining fall protection systems have more specialized applications.

- Positioning Device Systems
- Warning Line Systems
- Safety Monitoring Systems

Positioning device systems are intended primarily to protect construction workers doing formwork and reinforcing steel work. This type of system enables an employee to work with both hands free on a surface such as a wall or other vertical structure.

The two systems listed below have specific applications for roofing operations on low-slope roofs.

Warning line systems consist of ropes, wires, or chains and supporting stanchions that form a barrier to warn employees they are near an unprotected roof side or edge. Warning line systems are used to mark off an area within which employees may do roofing work without using guardrails or safety nets.

Safety monitoring systems also have applications when conventional fall protection cannot be used and when no alternative measures have been implemented. However, **safety monitoring systems do not provide a physical means of preventing or arresting falls.** A competent person (See *Definitions*) must be available on site to monitor and ensure the safety of employees exposed to fall hazards in the areas defined. This safety monitor must be on the same surface as the employee(s) being monitored and have no other assigned duties that may present distractions from monitoring duties.

In the 1926 construction standard, OSHA identifies nine other methods that can be used to reduce employee exposure to fall hazards. These methods and their uses are specific to various types of work

⁶ Lifelines add versatility to the fall arrest system. When used in conjunction with rope grabs, a lifeline allows the worker to move along the length of the line rather than having to disconnect and find a new tie-off point. The rope grab is engineered to arrest a fall instantly. A rope grab and lifeline system is a passive form of protection, allowing the user to move as long as tension is slack on the lifeline. If a fall occurs, the tension on the rope grab triggers the internal mechanism to arrest the fall. Retractable lifelines automatically retract any slack line between the worker and the tie-off point. This type of line must be kept directly above the worker to eliminate any potential swing hazard if the worker falls.

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tasks and may be combined if needed. [Reference 29 CFR 1926 Construction Standards for specific information] Briefly, these methods include:

- Controlled access zones
- Covers
- Fall protection plans
- Barricades
- Canopies
- Equipment guards
- Fences
- Screens
- Toe boards

15.5.5 Fall Protection – General Information

When a fall hazard cannot be eliminated altogether, the employee can generally avoid falling by use of a primary system such as a working platform or the climbing structure. Fall protection is recognized as a visible, secondary system that prevents or arrests a fall if the employee makes a mistake, or if the primary protection system fails. Where a complete secondary system is infeasible, specific steps are required to limit, as far as feasible, the risk(s) to the employee.

There are five classes of fall protection. Each is based on the risk and level of knowledge required by the employee. In decreasing order of preference, the first four classes listed *provide 100% fall protection*. The fifth addresses situations where it has proven to be infeasible to provide a system to prevent or arrest falls. Brief explanations follow for each class of fall protection.

- ☐ Hazard Elimination In this form of fall protection, the process has usually been redesigned to eliminate (engineer out) employee exposure to a fall hazards. This is often not recognized as fall protection because the solution leaves no visible hazard or need for a secondary system to protect the employee. The *best* means of providing fall protection is always to eliminate the need for an employee to be exposed to a fall hazard. Work processes can be redesigned, special tools and equipment employed, or the work can be moved to a safer place. A good example of elimination of a hazard is building an exterior wall and roof trusses on the ground and then using a crane to lift them into the higher position rather than have the employee do this work at elevation.
- ☐ Traditional Fall Protection This *secondary* system passively barricades employees from reaching the hazard. No special training is required to know how to work safely in the vicinity of the fall hazard. Examples of this type of fall protection are guardrails, windows, gates and chains, and various types of hole covers.

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- ❑ Fall Restraint This type of system is attached to employees to keep them from reaching the fall hazard. Workers need training to recognize hazards and to know how to correctly establish and use the system. This is a type of work restraint for employees who may be working on the tops of round structures such as tanks, or, on roofs adjacent to unprotected edges or openings.
- ❑ Personal Fall Arrest Systems This system is used to catch the employee [generally from an elevated position] when the possibility of a fall cannot be prevented. Employees need training to recognize the hazards, to know how to correctly set up and use the system, and how to respond (i.e., to perform a self rescue or assist a co-worker) in the event of a fall. Examples of this type of system are vertical and horizontal lifelines and body harness. Specific guidelines exist in the OSHA 1926 Construction Standard for required strength testing of each element of these systems.
- ❑ Fall Protection Work Procedures These procedures are used ONLY when it is clearly infeasible⁷ to provide 100% fall protection using any of the above four methods. Advanced planning [including a comprehensive Risk Assessment approved at the appropriate management level] and training is required for employees to recognize the hazards and to know how to undertake the work as safely as possible. Fall Protection procedures (e.g., a Fall Protection Plan) use warning systems and special work methods. Examples where these work procedures are used are during leading edge construction work and roofing activities.

Acceptable reasons for determining that the use of fall protection is infeasible can include the following.

- When the duration of exposure to the hazard while installing a fall protection system exceeds the duration of the work
- When the fall protection system unacceptably (dangerously) impedes worker mobility
- When the movements of multiple workers would result in entanglement of employee connections to the system, avoidance of which would require inordinate (dangerous) diversion of employee attention
- When the employees may not be able to escape quickly from a dangerous zone in the event of a mishap
- When the anchorage points elevated above the working surface would interfere with the work
- When the anchorage points below or on the working surface would not provide the required level of protection.

Unacceptable reasons *always* include:

- Cost
- Employee resistance to the use of fall protection procedures
- Continued use of current practices which were acceptable in the past
- Determination that insufficient time exists to implement a fall protection system

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⁷ Fall protection can be termed '*infeasible*' ONLY when the system used would create more danger than the work itself. Infeasible then means it is impossible to perform the construction work using a conventional fall protection system (i.e., guardrail system, safety net system, or personal fall arrest system) or that it is technologically impossible to use any one of these systems to provide fall protection. [Reference – 29 CFR Subpart M – 1926.500(b)]

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Fall Protection Plans [as opposed to *Fall Protection Programs*] are developed and evaluated on a site-by-site basis. They must be prepared by a *Qualified Person* (See *Definitions*) and provide precise details of the work procedures to be followed to make the work as safe as possible for the employees involved. The plan must be current and readily available at each of the job sites. An effective fall protection plan can protect workers from fall hazards and enhance the overall level of safety at a job site.

An important part of a fall protection plan is the requirement to describe how the alternative fall protection methods used will protect workers. *Illustration 1* provides a suggested format for listing fall hazards.

A second example of a fall protection checklist is shown in *Illustration 2*. [A sample Fall Protection Plan can be found in *29 CFR 1926 Subpart M - Appendix E*.]⁸

15.5.6 Ladders

Employees tend to take ladders for granted as they seem to be indispensable tools and are used on virtually every worksite. It is important to remember that individuals who fall from ladders are usually less than 10 feet above the ground. Statistics show that most of these falls involve portable ladders that move, tilt, or shift while an employee is climbing or descending or attempting to carry tools or equipment with them while climbing. [Reference *Footnote 2*]

There are many different types of portable ladders, but each receives one of four ratings, based on their maximum working load (the maximum weight they can safely support). These ratings are:

Rating	Working Load
Extra heavy duty (I-A)	300 pounds
Heavy duty (I)	250 pounds
Medium duty (II)	225 pounds
Light duty (III)	200 pounds

Most of the ladders used on agency worksites are self-supporting ladders although some jobs require the use of non-self supporting types. Ladders come in different types because employees who use them do different tasks and have different needs. Ladders are easier and safer to use when they are appropriately matched with the intended task.

⁸ Generally, the option of creating a **fall protection plan** is available only to employees engaged in leading edge work, pre-cast concrete construction work and in residential construction work who can consistently demonstrate that it is infeasible or that it creates a greater hazard to use conventional fall protection systems and equipment.

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Most portable ladder accidents happen when workers do one or more of the following:

- Fail to inspect ladders regularly
- Place ladders inappropriately
- Ignore safe practices when climbing or descending.

Employees can reduce ladder fall risks by:

- Inspecting and maintaining ladders frequently
- Matching tasks to appropriate ladders
- Setting up ladders correctly
- Climbing and descending ladders properly

Employees must avoid the following activities:

- Placing a ladder in front of an unlocked, unguarded door
- Setting a ladder on boxes, table, trucks, or other moveable objects
- Working on ladders in exposed areas during severe weather conditions
- Using a portable ladder if an approved stairway could be used instead
- Sliding down a ladder
- Climbing when hands or shoes are slippery
- Using hands for carrying items
- Placing tools or materials on a ladder if these items could easily fall
- Using any ladder with conductive side rails near exposed, energized equipment

15.5.7 Responsibilities

Manager and supervisors are responsible to ensure that all employees are protected from fall hazards during the work day. All work sites must be evaluated to determine existing fall hazards and the means to eliminate these hazards. If certain fall hazards cannot be practically eliminated by such means as guardrails, toe boards, warning lines or barricades, then appropriate personal fall protection systems must be used and safe work practices established.

The Safety Manager is available to assist supervisors in reviewing the work environment and activities to identify potential hazards. A Risk Analysis (RA) is used to document the hazards associated with each type of work.

Employees are responsible to use assigned personal fall protection gear consistently and within the scope of training received. Personal fall arrest systems must be inspected prior to each use for wear damage and other typical deterioration. This inspection includes looking for frays or broken strands in lanyards, body harnesses and lifelines, and oxidation or distortion of any metal connection devices. To properly maintain the devices, periodic cleaning is necessary. Defective components must be removed from service.

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Employees are encouraged to contact the supervisor or the Safety Manager if unsure of job procedures using fall protection devices or if equipment is found to be defective.

15.5.8 Procedures

The goal of this *Fall Protection Program* is to provide general guidance in identifying fall hazards, in minimizing employee exposure to those hazards, and in determining which equipment or work processes may best safeguard the employee while at work. The ultimate goal of a fall *arrest* system is to limit the fall distance. The *Reference* section provides additional fall protection information and web sites.

The supervisor and the employee must jointly prepare a Risk Assessment (RA) [Reference *Illustration 3*] which describes the nature and severity of the hazards to which the employee is exposed and specifies the fall protection equipment (and all other personal protective equipment) required to abate the hazards. All Risk Assessment must be signed. For any fall protection program to be effective, at a minimum, supervisors should:

- Ensure that all work areas including stairs and walkways are kept clean and orderly
- Select fall protection systems appropriate for specific work situations
- Use proper installation methods for safety systems
- Provide supervision and support for employees and ensure the consistent use of safe work procedures
- Train employees in the proper selection, use and maintenance of fall protection systems
- Use appropriate guarding methods for all floor and wall openings
- Post load rating limits on all floors, roofs, and storage areas
- Ensure that stairway railings and guards are installed as required

15.5.9 Training

Supervisors must plan for appropriate training to be provided to each employee who is required to wear personal fall protection gear or who is exposed to fall hazards. Following this training, each employee should understand how to recognize and minimize the fall hazards in the work environment. In general, employees should be trained in the following areas, dependent upon the type of fall protection system required.

- The nature of fall hazards in the work area
- The correct procedures for erecting, maintaining, disassembling, and inspecting fall protection systems to be used
- The use and operation of controlled access zones and guardrails, personal fall arrest equipment, safety nets, warning lines, safety monitoring systems, controlled access zones, and any other type of fall protection that may be applied during the work effort
- The role of each employee in the safety monitoring system when this system is in use
- The limitations on the use of any mechanical equipment during the performance of roofing work on low-slope roofs

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- The correct procedures for equipment and material handling and storage and the erection of overhead protection
- The role of each employee when a fall protection plan is in effect.

Employees who use or intend to use a personal fall arrest system or a positioning device system must also be trained to understand the following points.

- How to properly wear the equipment
- Proper hookup and attachment methods for the equipment
- Appropriate anchoring and tie-off techniques for the work specified
- How to estimate free-fall distance⁹
- Inspection and storage procedures for the equipment
- Self-rescue procedures and techniques

All training must be documented. Refresher training is provided when required. Additional training opportunities can be available for an employee who must perform unfamiliar job tasks or work in an unfamiliar location.

To assist supervisors with training requirements, a Power Point® presentation is available on the BLM Intranet Safety Web page at <http://web.or.blm.gov/safety/training/training.htm>. This site also contains additional training aids including preparation notes for the supervisor, an informal fall protection quiz (also part of the PPT program), and a form to document training completion. The Safety Manager may be contacted regarding questions or concerns, or to secure the services of private training consultants when necessary.

15.5.10 Emergency Response

Fall protection systems are designed to minimize employee exposure to fall hazards and to reduce the risk of injury if they do fall. Nevertheless, it is important to establish procedures to ensure that employees who do fall receive prompt emergency medical attention. OSHA requires that any time fall protection is worn by employees, an appropriate rescue system is in place that will provide for prompt (within 15 minutes) rescue; or, that will ensure the capability of an immediate self-rescue.

An emergency procedure/rescue plan must be in place at each work site. These procedures/plans must identify key rescue and medical personnel, equipment available for rescue, emergency communications procedures, retrieval methods, and primary first-aid requirements. The rescue plan must be prepared prior to starting work and must be described on the Risk Assessment (RA) form.

⁹ Free fall means the act of falling before a personal fall arrest system begins to apply force to arrest the fall. Specific guidelines exist regarding arresting force requirements. [Reference the *Definitions Section* and *CFR 1926 Construction Standards*.]

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Supervisors will ensure that each employee thoroughly understands the rescue plan and has immediate access to emergency phone numbers.¹⁰

The following are suggested guidelines for development of emergency response procedures and plans.

Before on-site work begins, inform emergency responders of any conditions at the site that may hinder a rescue effort.

- Document rescue procedures and post at the worksite/inform employees of locations
- Post emergency responder phone numbers and addresses at the site
- Mark the worksite with signs noting the easiest routes in and out of the site
- Ensure that responders have quick access to rescue and retrieval equipment such as lifts and ladders

If an emergency occurs:

- Call 911 or other emergency numbers in the response plan; secure the scene
- Make certain that only qualified personnel attempt a technical rescue
- Assign personnel to meet rescuers to direct them to the accident scene
- Provide comfort care and check vital signs if victim is accessible; if necessary, administer CPR and attempt to stop any bleeding [per standard first aid procedures]

¹⁰ Any employee required to work over or near water where the possibility of drowning (following a fall) exists must wear a U.S. Coast Guard approved life jacket or buoyant work vest. A rescue plan is required.

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Anchorage – a secure point of attachment for lifelines, lanyards, or deceleration devices

Body Harness – straps that may be secured about the person in a manner that distributes the fall-arrest forces over at least the thighs, pelvis, waist, chest and shoulders with a means for attaching the harness to other components of a personal fall arrest system

Competent person – (qualified person) means one who is capable of identifying existing and predictable hazards in the work area and conditions, and who understands how to control or minimize those hazards

Connector – a device that is used to couple (connect) parts of a personal fall arrest system or positioning device system together

Controlled access zone – a work area designated and clearly marked in which certain types of work may take place without the use of conventional fall protection systems – guardrail, personal arrest or safety net – to protect the employees working in the zone

Deceleration Device – Any mechanism – such as rope, grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, or automatic self-retracting lifelines/lanyards – which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest

Deceleration Distance – the additional vertical distance a falling person travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which a deceleration device begins to operate

Free fall – the act of falling before a personal fall arrest system begins to apply force to arrest the fall

Guardrail system – a barrier erected to prevent employees from falling to lower levels

Lanyard – a flexible line or rope, wire rope, or strap that generally has a connector at each end for connecting the body harness to a deceleration device lifeline, or anchorage

Leading edge – the edge of a floor, roof, or formwork for a floor or other walking/working surface which changes location as additional floor, roof, decking or formwork sections are placed, formed or constructed

Opening – a gap or void 30 inches or more high and 18 inches or more wide in a wall or partition through which employees can fall to a lower level

Personal fall arrest system – a system including but not limited to an anchorage, connectors, and a body harness

Unprotected sides and edges – any side or edge (except at entrances to points of access) of a walking/working surface (e.g., floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches high

Warning line system – a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge and which designates an area in which roofing work may take place without the use of guardrail or safety net systems to protect employees in the area

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Federal

29 CFR 1910 – General Industry Standards

Subpart D – Walking/Working Surfaces

29 CFR 1926 – Construction Standards

Subpart M – Fall Protection/Subpart L – Scaffolds/Subpart X – Stairways and Ladders

OSHA Information Bulletin 2004 – Suspension Trauma/Orthostatic Intolerance [3 pages]

OSHA 3124 – 2003 (Revised)

Stairways and Ladders: A Guide to OSHA Rules

OSHA 3146 - 1998 (Revised)

Fall Protection in Construction – Discusses general fall protection concepts and 1926 Subpart M

American National Standards Institute

ANSI A1014-1991, Standard for Construction and Demolition Operations – Requirements for Safety Belts, Harnesses, lanyards and Lifelines for Construction and Demolition Use

ANSI Z359.1-1992, Safety Requirements for Personal Arrest Systems, Subsystems and Components¹¹

ANSI A1264.1-1995 (R2002) Standard safety Requirements for Workplace Floors and Wall Openings, Stairs and Railing Systems

ANSI A1264.2-2001 Standard for Provision of Slip Resistance on Walking/Working Surfaces

OR-OSHA Publications

Portable Ladders – Types, Use and Care - #3083

Fall Protection for Roofing Work - #2824B

Fall Protection in the Construction Industry - #2824

Scaffolds - #3320

Websites

OSHA Safety and Health topics: Fall Protection

<http://www.osha.gov/SLTC/fallprotection/standards.html>

Oregon Occupational Safety and Health Division www.ororsh.org

Washington State Occupational Safety and Health Division www.wisha.org

¹¹ ANSI is currently in the process of updating the Z359.1-1992 standard *Safety Requirements for Personal Fall Arrest Systems*, which will include new sections on fall protection training and competency. The revised standard will cover a multitude of fall protection issues from training and fall arrest systems to rescue operations, based on the need to aid workers in all elements of fall protection. The standard is scheduled to be finalized in the summer of 2004. Following this publication, the Z359 Fall Protection Committee will begin work on several new fall-related issues such as anchorage points, horizontal lifelines and rope access. The goal is to provide a comprehensive managed fall protection program which will assist in filling in the gaps for corporations; providing them with ways to implement fall protection programs and systems, not just how to use fall protection equipment.

ANSI intended to request that the OSHA cite this publication in Subpart D of 29 CFR 1910, Personal Protective Equipment (PPE).

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Frequently Asked Questions (FAQs)

What is Fall Protection?

Fall Protection is a system that is designed to protect personnel from the risk of falls when working at elevated heights.

- *Fall Prevention* is a structural design that limits a fall to the same level. Some examples are platforms with guardrails, bucket trucks or aerial lifts with work platforms.
- *Fall Arrest Equipment* is designed to significantly limit injuries in the event of a fall. It is very important that the equipment is selected and worn correctly.

What is Fall Arrest Equipment?

An easy way to remember the components of fall arrest equipment is the following:

- A is for the Anchor Point. Something has to keep an employee safely suspended in the air. Federal Law requires an anchor point that is structurally sound, good for a static force of 5000 lbs. Some options are permanent or reusable anchors that can be attached to roof decks or steel beams.
- B stands for the Body Harness. The harness straps around the chest, buttocks and thighs. Newer fabrics make the webbing stretchable providing or a more comfortable fit. In the event of a fall, the employee would be suspended upright and intact.
- C relates to the Connecting Device. This connects the body harness to the anchor point. Generally these are referred to as shock absorbing lanyards, or self retractable lifelines. A very important part of the connecting device is the locking snap hook. Locking snap hooks are required by Federal Law to prevent 'roll out.' Roll out has resulted in fatalities when the snap hook has become disengaged from the anchor point.

Who is responsible to provide Fall Protection to employees?

Managers and supervisors have primary responsibility for providing safe working conditions for all employees. Employees are responsible to follow all safety guidelines and consistently use personal protective equipment provided.

What are the most frequently cited serious violations of the fall protection provisions?

- Failure to protect workers from falls of 6 feet or more from unprotected sides or edges [e.g., floors and roofs]
- Failure to protect workers from falling into or through holes and openings in floors and walls
- Failure to provide guardrails on runways and ramps where workers are exposed to fall of 6 feet or more to a lower level

H-1112-1 SAFETY AND HEALTH MANAGEMENT
Fall Protection Checklist - Example

Fall Hazard Checklist		
<p>Use this checklist to identify fall hazards at the worksite. Check all boxes that apply. Check "YES" if hazards exist: Check "N/A" if not.</p>		
HAZARD	YES	N/A
Hoist Areas		
Holes		
Formwork		
Rebar		
Runways		
Excavations		
Dangerous Equipment		
Overhand bricklaying		
Floor joists and trussing		
Floor sheathing		
Erecting Exterior Walls		
Roof Trussing and Raftering		
Roof Sheathing		
Roofing		
Wall Openings		
Falling Objects		
Other		

Illustration 2
(15.1-2)

H-1112-1 SAFETY AND HEALTH MANAGEMENT
Fall Protection Systems Checklist and Training Documentation
Example

Fall Protection Systems Checklist										
Fall Protection System	Training Received									
	N/A	Installation	Maintenance	Inspection	Disassembly					
Guardrail Systems										
Personal Fall Arrest Systems										
Safety Net Systems										
Controlled Access Zones										
Roof Brackets										
Covers										
Fences and Barricades										
Safety Monitoring Systems										
Name of Employee: _____ Date _____ NOTES:										

Illustration 3
(15.1-3)

H-1112-1 SAFETY AND HEALTH MANAGEMENT
Risk Management Worksheet*

(*Official form may be referenced on the Safety Website and the BLM Forms Link on the Intranet.)

For Illustration Only

1. Organization and Location										2. Page ____ of ____				
3. Operation/Task					4. Beginning Date		5. Ending Date		6. Date Prepared					
7. Prepared by (Name/Duty Position)														
8. Identified Hazards		9. Assess the Hazards: Initial Risk			10. Control Measures Developed for Identified Hazards (include all PPE)			11. Assess the Hazard's Residual Risk		12. How to Implement the Controls		13 Supervisors and Evaluation By		
(Be Specific)		L	M	H	E	(Be Specific)			L	M	H	E	(Be Specific)	(Be Specific)
14. Remaining Risk Level After Control Measures Are Implemented. (Circle Highest Remaining Risk Level)						LOW Line Supervisor		MEDIUM (Branch Chief)		HIGH (District Manager)		EXTREMELY HIGH (Must be State Director/Associate)		
<p>15. RISK DECISION AUTHORITY: (Approval/Authority Signature Block) [If initial risk level is Medium, High or Extremely High, brief risk decision authority at that level on controls and control measures used to reduce risks] NOTE: If the person preparing the form signs this block, the signature indicates only that the appropriate risk decision authority was notified of the initial risk level, control measures taken and appropriate resources required; and, that the risk was accepted by the decision authority.]</p> <p>_____</p> <p>Signature</p>														

Form 1112-5
(May 2001)